

REVIEWS

Marshall, F. H. A., M.A., D.Sc. *The Physiology of Reproduction*, with illustrations. London: Longmans; 1910; pp. 706; price 21s. net.

IN a Preface, short but much to the point, which Professor Schäfer contributes to this work, he remarks that it is the first presentation in a complete form of a subject which is no longer merely of interest to members of the medical profession and to breeders of animals. "Especially," he continues, "will the work furnish a much-needed introduction to the science of Eugenics." It is a significant fact that a distinguished teacher of physiology whose work has been mainly done during a period when eugenics was usually regarded as an absurd fad, should thus recognise its claim as a science. It may be added that the book is also an indispensable introduction to the psychology of sex. Many books have been written in the past more or less dealing with the physiology of reproduction (I may be permitted, as having been responsible for its genesis, to recall *The Evolution of Sex* by Geddes and Thomson), but they are not only now out of date but were incomplete even at the outset. It is, therefore, a great satisfaction to possess a work in which not only are the results reached by the latest investigators clearly and critically summarised by one who is entitled to say *Quorum pars magna fui*, but wherein the whole subject is set upon a new, broader, and entirely modern basis. By a graceful act of recognition, the book is dedicated to Mr. Walter Heape, who has been the pioneer in the modern development of the physiology of sex.

The actual problems of eugenics are at no point discussed by Dr. Marshall, and even heredity and variation, which, while proper subdivisions of his subject, have lately received a disproportionate amount of attention, are for the most part excluded. The field still remains very extensive. An interesting introductory chapter discusses the breeding season from among the Protozoa up to the Mammalia. In the three following chapters the fundamental subject of the mammalian oestrous cycle is investigated, with the changes which take place in the uterus and ovaries in preparation for the possibility of impregnation. Chapter V. deals with the origin and nature of the sperm cells and with the act of insemination. A full and important discussion follows of fertilisation and the conditions under which it occurs; here may be found some interesting criticisms of certain aspects of Mendelianism, especially that its conception of unit characters takes insufficient account of the metabolism of the organism as a whole. After a chapter devoted to the male accessory reproductive organs, we reach a chapter (written by Dr. Cramer) on the obscure and difficult subject of the bio-chemistry of the sexual process; most of the work in this department belongs to the last ten years and it is difficult to formulate any general conclusions. The question of the internal secretions (now called hormones) of the testicles and ovary (dealt with in Chapter IX.), while also a very modern study, presents itself in a more tangible form, and has led to some fairly definite conclusions: the testis is proved to be an organ of internal secretion, this secretion being probably formed throughout the whole reproductive period of life; the ovary, also, in addition to its ova-forming function, secretes a chemical substance or substances reacting on the general metabolism and controlling the nutrition of the uterus, the present close co-ordination between ovarian and uterine functions having

perhaps arisen very gradually in the course of evolution; the effects of early castration in both sexes show the influence of the internal secretions on the secondary sexual characters, and on metabolism, though this latter effect has still not been thoroughly elucidated. Chapter X. (written by Dr. Lockhead)—the longest in the book—deals with the placenta and the problem of foetal nutrition; it is naturally followed by a chapter (by the same writer) discussing the changes in the maternal organism during pregnancy; here is pointed out the influence of the internal secretions and their chemical stimuli on the phenomena of pregnancy and parturition. Chapter XII. is mainly concerned with parturition, and Chapter XIII. with lactation, a function which appears to be of complicated origin and is now by many supposed to be partly, though not entirely, due to an internal secretion proceeding from the foetus. In Chapter XIV. we are brought near to eugenic questions and the author briefly discusses the effects of environment and nutrition, in-breeding and cross-breeding, abortion, the birth-rate, etc., without setting forth any premature conclusions on disputed points. In the next chapter he discusses the factors which determine sex, concluding that it is not determined by the same factor in all cases, nor at the same period of development; he adopts the now widely accepted view that all individuals are potentially bisexual, one sex being usually recessive or latent. The final chapter winds up the subject with a general consideration of the phases of life and the causes of death.

There are two types of scientific mind: one which accumulates a group of concordant facts and resolutely ignores or denies all the facts which do not fit into the group; another which follows the fluidity of the facts and exerts its skill chiefly in seeking to harmonise those facts which at first sight seem inharmonious. It would be easy to name distinguished examples of the first type; Dr. Marshall evidently belongs to the second type. It is fortunate, for in this biological field any other method could only lead to distortion. The method of art, Aristotle said, is one of continual slight variation; it is the method of the supreme artist, Nature, who reveals many general harmonies overlying a perpetual slight variation in details. Dr. Marshall's way of dealing with these variations of detail is beautifully illustrated, for instance, in his discussion of the factors which determine sex, a field which has always been very tempting to the narrow-eyed men of one idea. His expositions are lucid and his criticisms judicious and temperate, so that he may be reckoned a safe guide in a difficult country even for those who have little or no expert knowledge of their own. At times one is tempted to think that he is perhaps rather too widely sympathetic, and he sets forth, with no signs of disapproval, several of the most hazardous of Metchnikoff's speculations.

The illustrations are numerous and for the most part excellent. The Index is fairly full, but, as regards subjects, it might with advantage be made more precise and detailed in the enlarged edition of the work which the growth of knowledge will doubtless soon make necessary.

HAVELOCK ELLIS.

Bourne, GEORGE. *The Ascending Effort.*

IN a long and somewhat tedious essay the author claims that, before Eugenics can be accepted by the nation, as Sir Francis Galton proposed, with the fervour of a new religion, it will be necessary to pave the way by raising considerably the standard of culture in all classes of society. This æsthetic education is the function of Art; but, as he rightly points out, such development must be general and not special, since all forms of didactic art are, *ipso facto*, self-negated. A scientific principle, he contends, is incapable of giving rise to that emotional attitude of mind which is the essential factor of human advance; but when once the quest has filled men's minds, this science-forged girder shall be seized upon and made the keelson of the new-launched Argo.

I. G.